

AMENDMENT UNDER 37 C.F.R. §1.111
APPLICATION NO. 09/462,415
ATTORNEY DOCKET NO. Q57408

wherein:

a first frequency band for receiving microwaves defines a receive frequency band of the circuit, and a second frequency band for transmitting microwaves defines a transmit frequency band of the circuit,
the filter means and means for amplifying include at least two filter and amplifier stages connected to the radiating means,
the filter stages comprise a planar filter and the amplifier stages comprise an amplifier,
the filter stages alternate with the amplifier stages, there being a filter for each amplifier,
the planar filter is a bandpass filter for the receive frequency band with low attenuation for microwaves of the receive frequency band,
the planar filter has a moderate rejectivity for the microwaves of the transmit frequency band,
the amplifier has, as a gain, a fraction of the total gain of the circuit, all of the filters have at least approximately the same center frequency and bandwidth, and
said filter and said amplifier stages apply progressive filtering and amplification.

2. (Amended) A circuit according to claim 1, characterized in that the planar filter of the first stage is connected directly to the radiating means.
3. (Amended two times) A circuit according to claim 1, characterized in that the attenuation of the filter of the first stage and the gain of the amplifier of that stage have values such that the amplifier is not delinearized by residual transmit signals not eliminated by the associated filter.
4. (Amended two times) A circuit according to claim 1, characterized in that the total rejectivity needed to eliminate the transmit frequencies is in the order of 50 dB and the rejectivity of the filter of the first stage is in the order of 14 dB.

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5. (Amended two times) A circuit according to claim 1, characterized in that the amplifier of the first stage comprises at least one transistor, that stage is of hybrid form and the transistor comprises a semiconductor die with no packaging disposed on the substrate on which the planar filter is implemented.
6. (Amended) A circuit according to claim 5, characterized in that the stage farthest from the radiating means is in the form of an integrated circuit, for example an MMIC.
7. (Amended) A circuit according to claim 6, characterized in that the radiating means are mobile, the first stage is also mobile and the stage implemented in the form of an integrated circuit is immobile.
8. (Amended two times) A circuit according to claim 1, characterized in that the substrate for the planar filter of the first stage has a matrix of a flexible organic material such as PTFE.
9. A circuit according to claim 8, characterized in that the substrate contains glass fibers for mechanical reinforcement and a dielectric, for example ceramic, filler.
10. (Amended two times) A circuit according to claim 1, characterized in that it includes three filter and amplifier stages and the filter farthest from the radiating means has a higher attenuation than the filters of the other two stages.
11. (Amended two times) A circuit according to claim 10, characterized in that the intermediate filter and amplifier stage is in hybrid form with a transistor comprising a semiconductor die with no packaging disposed on the substrate on which the planar filter is implemented.

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12. (Amended) A circuit according to claim 11, characterized in that the intermediate stage and the first stage are made on the same substrate.

13. (Amended two times) A circuit according to claim 1, characterized in that the amplifier of the first stage includes a field effect transistor and in that a connecting wire connected to the source forms a feedback inductor with a value chosen to minimize noise.

14. (Amended) A circuit according to claim 1, characterized in that receive frequencies are in the band from 11.7 GHz to 12.55 GHz and transmit frequencies are in the band from 14 GHz to 14.3 GHz.

15. (Amended) A circuit according to claim 1, characterized in that the microwaves transmitted and received are orthogonally polarized, in particular with circular polarizations in opposite directions.

16. (Amended) A circuit according to claim 1, characterized in that the planar filter is implemented in the microstrip or suspended triplate technology.

17. (Amended) The use of the circuit according to claim 1 to a terrestrial telecommunications system terminal which comprises a transceiver circuit for communicating with another terrestrial terminal or a station providing services via a non-geostationary satellite.

18. (Amended two times) A method of receiving microwaves via radiating means, comprising:

filtering eliminates microwaves, transmitted in a transmit frequency band by the radiating means;

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amplifying microwaves received in a receive frequency band;
wherein:

the filtering and amplification are progressive,
the first filtering stage, starting from the radiating means, uses a planar filter with a bandpass for the receive frequency band and with moderate rejectivity for the microwaves of the transmit frequency band, the first stage amplifier gain is a small fraction of the total necessary gain,
the filters performing the filtering have at least approximately the same center frequency and bandwidth, and
the filtering and amplifying are performed alternately, there being a filtering for each amplification.

19. (Amended) A method according to claim 18, characterized in that the rejectivity of the first filter stage is determined as a function of the compression point of the amplifier of the first stage, the power to be transmitted and the isolation between the two ports of the radiating means.